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ABSTRACT

This training unit on salvage and overhaul is part of a 17-unit course package written to aid instructors in the development, teaching, and evaluation of fire fighters in the Wisconsin Fire Service Certification Series. The purpose stated for the 8-hour unit is to familiarize fire fighters with basic salvage cover operations and basic fundamentals of good overhaul work. An instructor's guide sheet provides this information: introduction to the topic, instructor preparation, length of unit, methods of instruction, testing, equipment and facilities required, recommended visual aids, and references. Following a list of unit objectives, a lesson plan outlines the main teaching points and states the preferred teaching method, cites the reference and page number(s) where the information is to be found, and indicates the necessary handouts. Other contents in the unit include a unit quiz, answer key to the quiz, and handouts (graphs, student worksheets, informational material, and forms). (YLB)

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FIRE SERVICE CERTIFICATION SERIES

UNIT FSCS-FF-15-81

SALVAGE AND OVERHAUL

FIRE SERVICE TRAINING

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SALVAGE AND OVERHAUL

Prepared by:

Paul F. Pribyl
Fire Service Consultant

INTRODUCTION

In this unit the instructor should emphasize the point that salvage work is an integral part of fire ground operations. The candidates need to know basic salvage cover operations. Upon completion of the unit, they should be capable of folding and throwing salvage covers correctly, splicing covers, and making chutes and catchalls.

The overhaul portion of the unit deals with basic fundamentals of good overhaul work.

When the unit is completed, the candidates should have become quite familiar with salvage and overhaul operations and be capable of performing good salvage work.

INSTRUCTOR PREPARATION

Carefully study the objectives to determine the goals that have been set for the firefighters upon completion of the unit.

Review the lesson plans and if necessary, consult the references listed.

Develop suitable audio-visual aids, provide training area and necessary tools and equipment to effectively teach this unit.

LENGTH OF UNIT

Classroom Work	4 hours
Practical Skills	3 hours
Testing and Evaluation	1 hour

METHODS OF INSTRUCTION

Lecture or Illustration
and Demonstration

Suggested methods and techniques are listed under Instructor's Notes on the lesson plans. For further information consult IFSTA #303 Fire Service Instructor, 3rd ed., pp. 57-77.

TESTING

At the end of this unit, a written quiz of five or more questions will be given.

EQUIPMENT AND FACILITIES REQUIRED

Classroom with necessary audio-visual equipment
Salvage covers of assorted sizes
Floor runner
Carry all
Material capable of being stacked
IFSTA slides or film on salvage

REFERENCES

1. Laughlin, J.W., Ed., Carlson, G.P. and Ostarhout, C.E., Assoc ed., Salvage and Overhaul Practices, #104, IFSTA, Stillwater, 6th ed., pp. 1-139 1979

2. Peige, J. , ed. Essentials of Fire Fighting, #200, IFSTA, Stillwater, 1st ed., 1977, , pp. 263-287

OBJECTIVES

All objectives in this unit are to be met according to the material contained in the International Fire Service Training Association Manuals #104 Salvage and Overhaul and #200 Essentials of Fire Fighting.

To satisfactorily complete this unit, the firefighter must attain a grade of 70 or higher on the written quiz and successfully complete the practical skills examination.

NFPA STANDARD 1001

SALVAGE AND OVERHAUL

FIRE FIGHTER I

3-6 SALVAGE AND OVERHAUL

3-6.1 The firefighter shall identify and describe the purpose of salvage, and its value to the public and the fire department.

3-6.2 The firefighter, as an individual and as a member of a team, shall demonstrate folds and rolls of salvage covers as used by the authority having jurisdiction.

3-6.3 The firefighter, as an individual and as a member of ateam, shall demonstrate salvage cover throws as used by the authority having jurisdiction.

3-6.4 The firefighter shall deminstrate the methods of inspection, cleaning and maintaining salvage equipment.

FIRE FIGHTER II

3-6 SALVAGE AND OVERHAUL

4-6.1 The firefighter, given salvage equipment, and operating as an individual and as a member of a team, shall demonstrate the construction of a water chute.

4-6.2 The firefighter, given salvage equipment, and operating as an individual and as a member of a team, shall demonstrate the construction and use of a water catch-all.

4-6.3 The firefighter, given salvage equipment but exclusing salvage covers, shall demonstrate the removal of debris, and removal and routing of water from a structure.

4-6.4 The firefighter, given the necessary equipment, shall demonstrate the covering or closing of openings made during fire fighting operations.

OBJECTIVES

FIRE FIGHTER II

4-17 OVERHAUL

4-17.1 The firefighter shall demonstrate the fire department procedure for overhaul of a building and its contents.

FIIRE FIGHTER III

5-12 OVERHAUL

5-12.1 The firefighter shall demonstrate methods and procedures used to detect and extinguish hidden fires.

COURSE: FIRE SERVICE CERTIFICATION SERIES

LESSON: SALVAGE AND OVERHAUL

EQUIPMENT NEEDED: SLIDE, OVERHEAD OR MOVIE PROJECTORS, SALVAGE COVERS AND TOOLS

TRAINING AIDS: TRANSPARENCIES, SLIDES, FILMS AND TEXTS

INSTRUCTORS NOTES	TEACHING POINTS
Ref: Salvage & Overhaul #104, IFSTA, 6th ed. pp. 1-126 Ref: Essentials of Fire Fighting #200, IFSTA pp. 263-287 3-6 Salvage 3-6.1 Ref: pp. 1-4 #104 6th ed. pp. 263-287 #200 1st ed.	SALVAGE Salvage work in the fire service consits of those methods and operating procedures which further reduce fire, water and smoke damage during and after fires. A portion of these damages can be attributed to the necessary operations of applying water, ventilating the building and tracing fires throughout a structure. These unavoidable procedures cannot be entirely eliminated, but improved techniques in fire extinguishment plus prompt and effective use of good salvage procedures result in a more systematic approach to minimize these losses. OVERHAUL Operations consisting of the searching for and extinguishing hidden or remaining fires; placing the building, its contents and the fire area in a safe condition; determining the cause of the fire; and recognizing and preserving evidence of arson. Salvage and overhaul may be performed simultaneously, but overhaul generally follows salvage operations. When effective salvage procedures precede a thorough and systematic overhaul, the result will have a significant effect upon reducing the extent of the loss and facilitate prompt restoration of the property to full productive use. RESPONSIBILITY OF FIRE DEPARTMENT Present-day practice reveals that most organized fire departments have assumed the responsibility of salvage and overhaul operations. Since efficient salvage work reduces the property damage, it is the fire departments duty to perform adequate salvage "PROTECT, NOT WRECK" should be their goal.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage & Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA pp. 263-287

3-6 Salvage

3-6.1

Ref: pp. 1-4 #104 6th ed. pp. 263-264 #200 1st ed.

RESPONSIBILITY OF FIRE DEPARTMENT

Proper and efficient salvage and overhaul work has often enabled businesses to continue after a fire with a minimum of interruption. It has also enabled families to resume living in their homes within a few hours after a fire has occurred.

The search for and extinguishment of hidden fires are accepted fire department functions.

With the added requirement of determining the point of origin and ignition source, especially on suspicious fires, the quality of salvage and overhaul work must be constantly improved in order to preserve fire scene evidence.

OWNER'S INTEREST AND RESPONDIBILITY

Most owners are eager to provide protection for their stock, merchandise or other valuable contents if techniques for such a program are made known to them.

Good salvage procedures for owners to follow should be given by those who represent the fire service as a cooperative phase of fire department inspection surveys.

These salvage procedures are allied with good maintenance and they are generally recognized as a responsibility of management.

Planning and preparation should be a joint or cooperative effot between the owner and fire officials. Some of these plans and preventive measures are as follows:

- Training of employees and private fire brigades on what to do in the event of fire
- Marking and identification of:
  Accounts receivable
  Extinguishers
  Floor drains
  High value goods
  Highly susceptible merchandise
  Scuppers
  Sprinklers
  Standpipes
  Valves
- Proper skidding of stock
- Keeping sprinkler heads free from obstruction
- Space between materials and walls

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA pp. 263-287

3-6 Salvage

3-6.1

Ref: pp. 1-4 #104, 6th ed. pp. 263-287 #200 1st ed.

TEACHING POINTS

OWNER'S INTEREST AND RESPONSIBILITY

. Space between materials

. Space between materials and ceiling

This can be extended to dwelling inspections where such simple ideas as keeping all the hangars in a closet one way will gain good will and aid in salvage work.

VALUE IN PUBLIC RELATIONS

The damage caused by heat, smoke and water can frequently exceed the direct loss by fire, but these losses may be materially reduced through planned and well-executed salvage and overhaul practices.

Fire protection people generally agree that good salvage and overhaul work is one of the most effective means of building good will.

A good rule to build public relations is:

TO TREAT THE PROPERTY ON THE FIREGROUND AS IF IT WERE YOUR OWN.

DATA FOR REPORTS.

Official reports on fires should be detailed, clear and ex. exact.

The contents of these reports are confidential and should be availalble only to those authorized to review their contents.

Official reports made concerning a fire, investigate conditions that might not otherwise be brought to light.

Such reports are essential on all building fires, should be made on fires that involved considerable loss and on fires that are suspicious.

An official fire department report is, in a sense, a story of conditions as they were found, what was done,,ones conclusions and departmental recommendations.

INSTRUCTORS NOTES	TEACHING POINTS
Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138 Ref: Essentials of Fire Fighting #200, 1st ed. pp. 263-287 3-6 Salvage 3-6.1 Ref: pp. 5-12 #104 6th ed. pp. 263-264	Salvage procedures, like first aid, are allied to fire fighting and require planning and preparing before they are performed. The success of any loss reduction through salvage practices depends considerably upon plans and preparation. Some of these plans have been previously mentioned with respect to responsibilities of the fire department and the owner. NOTE: Further information can be obtained from NFPA Pamphlet 604, Recommended Practices on Salvaging Operations Other than preparedness through inspection surveys, the bulk of planning and preparation lies with the firefighter's training. Their success or failure can be directly attributed to the degree to which they have familiarized themselves with salvage equipment and techniques. This will also reflect on the time in which the operations are carried out. IN SALVAGE, SPEED COUNTS. COOPERATING WITH OWNER AND/OR OCCUPANT In most instances, property owners or occupants have limited knowledge concerning salvage principles or requirements. Fire department representatives should take the initiative to inform them of recommended practices. These representatives should be prepared to . train plant employees in salavage techniques and . provide advice on storage, plant safety and equipment. Fire Department officials can insure good relations by clarifying the limitations of their salvage responsibility with management. COORDINATING PREPLANNING AND SALVAGE When pre-fire plans are made, all phases of fire fighting must be considered.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting, #200, IFSTA pp. 263-287

3-6 Salvage

3-6.1

Ref: pp. 5-12 #104
pp. 263-264 #200

COORDINATING PREPLANNING AND SALVAGE

Pre-fire planning is the process of planning fire fighting operations in advance from knowledge based on:

- surveys of conditions
- inspections of identified hazards
- relation of cause and effect
- reasonable expectations
- past experiences.

If a pre-fire plan is properly made, the need for salvage will be included in the plan.

The need for salvage operations at fires is always present.

Some factors that are pertinent to salvage operations and which must be considered in a pre-fire plan include:

- The are involved
- Nature of contents
- Merchandise requiring special handling (perishable food)
- Value of contents
- Automatic sprinkler systems
- Fire protection devices
- Personnel available
- Salvage equipment available
- Ventilation devices
- Vertical openings and drains

Officers should know what to look for in an occupancy such as protecting a machine shop including:

- covering machines to protect polished surfaces
- diking and covering electric motors
- covering conveyors
- and removing and protecting fabric belts.

PLANNING FOR SALVAGE OPERATIONS

SIZE-UP

One effective system of size-up includes the following steps:

- Facts
- Probabilities
- Resources available
- Decision
- Plan of Operation

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of ire Fighting #200, IFSTA pp. 263-287

3-6 Salvage

3-6.1

Ref: pp. 5-12 #104
pp. 263-264 #200

PLANNING FOR SALVAGE OPERATIONS

FACTS to be determined include:

- the nature of the emergency
- the size of the fire
- its location within the structure
- the type of construction of the involved building
- the type of contents exposed
- the fire protection features of the building
- the weather

and anything else regarding the building and its contents that could aid or hinder salvage operations.

When fires are checked above and below the fire, the salvage needs should be determined.

Operations should begin on the floor below the fire.

PROBABILITIES must include

- an estimate of where the fire may travel
- preventable damage
- possible hazards to personnel engaged in salvage
- possible effect of weather conditions on operations

and any other probability relating to operations.

RESOURCES available to deal with the emergency are such items as

- apparatus
- equipment
- personnel

Lack of personnel is almost always a problem.

A good salvage officer will develop an organization that will be effective at the outset with a minimum number of personnel.

The nucleus will be readily expandable in order to use additional personnel that may become available

(1) as the fire is brough under control
(2) through greater alarms or special calls
(3) through the use of the persons employed at the occupancy where the fire occurs.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, 1st ed. pp. 263-264

3-6 Salvage

3-6.1

Ref: pp. 5-12 #104
pp. 263-264 #200

TEACHING POINTS

PLANNING FOR SALVAGE OPERATIONS

DECISION essentially involves what to do and how to do it based on the evaluation of facts, probabilities and resources available.

A great number of decisions are required, and the officer in charge of salvage must be ready to make those decisions.

PLAN OF OPERATION resulting from size-up is a mental diagram of the processes necessary to achieve the objectives.

The plan should be as simple as possible so as to be readily communicated and easily understood.

After the plan is activated, constant supervision is required so that the plan will be consistently directed toward the objectives.

OTHER CONSIDERATIONS

All fire service personnel should be proficient in forcible entry so that they know where and how to gain access to a structure with a minimum of damage.

Salvage begins with care in forcing entry and the clearing of windows so that the frames are not unnecessarily damaged.

Watch for heavy flame conditions in ceiling areas that indicate the possibility of the ceiling dropping and the need to remove the contents of the room.

Ventilation is essential if damage from fire, smoke and heat is to be prevented.

Rapid removal of smoke, heat and gases during the early stages of fire pinpoints the area involved, allows fire-fighters to get closer to the source of the fire and provides a cleaner atmosphere in which to work.

Ventilation also minimizes the indiscriminate use of streams of water in areas where contents can be damaged or broken.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA pp. 263-287

3-6 Salvage

3-6.1

Ref: pp. 5-12 #104
pp. 263-264 #200

OTHER CONSIDERATIONS

The most significant of all salvage principles may be the accurate application of water.

Applying water at

. The wrong time

. From the wrong place

. With the wrong nozzle pattern

and

. In unnecessary amounts causes a great deal of preventable damage.

Water should not be applied in a smoke-filled area until ventilation has been accomplished and the seat of the fire can be found.

The wrong place may be either inside or outside of structures.

Although high-velocity, variable-pattern fog nozzles provide a means of using water with the greatest degree of efficiency, nozzles can contribute to unnecessary losses when used incorrectly.

Water is delivered not only at a high velocity, but in fine droplets that readily convert to steam.

This can result in great volumes of flame, heat and smoke being forced away from the point of application. Therefore firefighters must be trained in the correct use of fire streams.

Applying water from the outside of a structure SHOULD BE AVOIDED IN EVERY POSSIBLE INSTANCE.

This may also force flame, heat and smoke into uninvolved sections of the structure, sections that could contain articles highly susceptible to heat and smoke damage.

A similiar situation may occur where water is applied incorrectly within a structure.

Ideally, water should be applied from a position that will force the fire gases and heat to the exterior through windows,, doors or other openings.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA pp. 263-287

3-6 Salvage

3-6.1

Ref: pp. 5-12 #104
pp. 263-264 #200

OTHER CONSIDERATIONS

Application of water from the correct location will not only reduce unnecessary damage, but will also control a fire more quickly and serve to ventilate the fire area.

A major factor in reducing water damage is the immediate closing of a nozzle one the fire has been knocked down.

If additional water is applied, it will not be converted to steam and will do additional damage as it runs off.

REMEBER :

Indiscriminate application of large quantities of water on stocks of:

a. paper goods
b. ~~baled paper~~
c. fabrics
d. grain

and other bulk or porous material will cause excessive water damage and could cause the

OVERLOADING OF FLOORS WITH SUBSEQUENT COLLAPSE that

could result in unnecessary damage to the building or contents

and more importantly

RESULT IN FIREFIGHTERS BEING INJURED OR KILLED.

ARRANGING MERCHANDISE TO BE COVERED

Display shelves are frequently built to the ceiling and directly against the wall. This construction feature makes it difficult to cover shelving.

When water flows down a wall it will naturally come in cont ct with each shelf and wet the marchandise.

A better construction feature would be to allow adequate clearance between the shelves and the wall.

This construction feature should be discussed with the owner/occupant during a pre-plan inspection.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA pp. 263-287

3-6 Salvage

3-6.1

Ref: pp. 5-12 #104
pp.263-264 #200

TEACHING POINTS

ARRANGING MERCHANDISE TO BE COVERED

One common obstacle to efficient salvage work is the lack of skids under all stock that is susceptible to water damage.

Some examples of marchandise which have perishable characteristics are:

- flour
- materials in cardboard boxes
- feed
- paper

and other dry goods.

Stock in basements should be placed on skids at least five (5) inches above the floor, but stock on upper floors is reasonably safe with skids of lesser height.

When salvage covers are limited, it is advisable to cover the more valuable marchandise and sacrifice the less valuable.

It is also a good practice, when there is a shortage of covers, to use available covers for water chutes and catchalls even though the water must be routed to the floor and cleaned up afterwards.

Marchandise stacked to close to the ceiling will also present salvage problems.

There should be enough space between the stock and ceiling to allow firefighters to easily apply covers.

All material on the floor should be stored in neat and orderly stacks.

Firefighters should be aware of the more costly and essential contents of a building and make every effort to protect these items first.

Expensive machinery may require special salvage attention, but the high values of intricate equipment would make an extra effort worthwhile.

Pre-fire inspections allow for planning to establish which machines receive top priorities for covering.

Where valuable equipment may be easily protected from water damage but still subject to smoke or heat damage, ventilating procedures must be accomplished as soon as possible.

INSTRUCTORS NOTES

TEACHING POINT

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

ref: Essentials of Fire Fighting, IFSTA, 1st ed. pp. 263-287

3-6 Salvage

3-6.1

Ref: pp. 5-12 #104
pp. 263-264 #200

ARRANGING MERCHNDISE TO BE COVERED

Where a fire involves a business or manufacturing concern, a sincere effort must be made to protect the records of the occupant.

The important point is to save:

- insurance policies
- stocks and bonds
- orders
- inventories
- accounts receivable
- patents
- designs

and other records of business transactions.

ARRANGING HOUSEHOLD FURNISHINGS TO BE COVERED

Household furnishings present a different type situation than does merchandise.

If a reasonable degree of care is taken, one average size cover will usually protect the contents of one room.

When circumstances limit the covering of all items, those of greater value should be covered first.

A suggested procedure for arranging furniture in a room is as follows: in a bedroom

1. Group the furniture in the center of the room (but not under a light fixture which may leak water)
2. If possible remove rug from under furniture and roll up.
3. Place a dresser, chest or other high object at the head of the bed (with drawers facing the center of the arrangement to prevent water leakage into drawers)
4. Group other furniture close by and place lamps,pictures curtains and clothing on the bed.
5. Place rolled-up rug across the arrangement to act as a ridge pole and cover with salvage covers.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting, IFSTA 1st ed. pp. 263-287

3-6 Salvage

3-6.1

Ref: pp. 5-12 #104
pp. 263-264 #200

TEACHING POINTS

ARRANGING HOUSEHOLD FURNISHINGS TO BE COVERED

Living room

1. Group the furnishings in the center of the room (but not under a light fixture that might leak water)
2. Place furniture so that the tallest pieces are in the center.
3. If rug is removable, roll up and place across top of arrangement.
4. Place pictures and knicjknacks on sofa.
5. Try to have the arrangement slope outward when covered with salvage cover.

VALUABLES

Highly valuable items should be given to an officer immediately for proper disposition.

Firefighters SHOULD NEVER place valuable in their pockets FOR ANY REASON.

It may be sometimes necessary to place the cover into position before some articles are placed on the bed.

In this event, bed and furniture can be protected while other items are placed under cover.

Due care should be taken not to mar or scratch the finish or furniture since this could be worse than water damage.

Contents of residences can be protected by one or two firefighters well trained in salvage work.

This operation begins in the room directly under or adjacent to the fire area and involves grouping the contents so that a minimum number of covers will be required.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting, #200, IFSTA, 1st ed. pp. 263-287

3-6 Salvage

3-6.1

Ref: pp. 5-12 #104
PP. 263-264 #200

The salvage personnel should observe the following rules:

- Do not overlook the contents of closets.
- Check the tops of bureaus, dressers and tables, and place small valuables found on these in drawers for safekeeping.
- Use the largest and heaviest pieces of furniture as the base for the groupings Before other articles are piled on them, protect fabric covering and wood finishes with rugs, blankets, cushions or pillows.
- Do not build the pile too close to a wall where spreading covers will be difficult.
- Roll up any rugs, if possible, and place them on top of the grouping. If a rug cannot be removed, try to roll it from both ends toward the pile.
- Do not overlook paintings or wall tapestries, which may be placed on the pile after the larger and heavier pieces of furniture have been grouped.
- After salvage covers have been placed, tuck the edges around the base of the grouping and the rolled-up rug.

Refer to Handout #1

Where the floor or floor covering should be protected in addition to the grouped furnishings, covers can be placed in the order shown in Handout #1

OUTSIDE STORAGE

At times it may be necessary to protect materials stored outside from excessive water damage.

This may require covering with tarps or building dikes to channel runoff.

3-6 Salvage

3-6.4

Ref: pp. 13-24 #104
pp. 264-267 #200

SALVAGE EQUIPMENT

SALVAGE COVERS

The extent to which a fire department can perform salvage cover work depends largely upon the number and size of covers available.

Conventional salvage covers are made from closely woven canvas materials such as cotton duck which have been treated do waterproofing and fire resistance.

INSTRUCTORS NOTES	TEACHING POINTS
Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138 Ref: Essentials of Fire Fighting, IFSTA, 1st ed. pp. 263-287 3-6 Salvage 3-6.4 Ref: pp. 13-24 #104 pp. 264-267 #200 See Appendix B #104 6th ed. for additional information on disposable covers.	SALVAGE COVERS Salvage covers of rubber-coated cotton duck have been used and plastic covers are also in limited use. Salvage covers have reinforced corners and edge hems into which grommets are placed for hanging or draping covers Salvage covers can be obtained in various sizes, but the sizes ranging from 9 by 12 feet and 14 by 18 feet are most common. The smaller sizes lend themselves to easy handling, but the larger sizes will cover more merchandise or furnishings. A relatively new trend, the use of plastic salvage covers. shows some promising advantages. These covers are made from 100 percent polyethylene. This type of cover is extremely lightweight and easily handled. A cover made from No. 3 heavyweight polyethylene and comparable in size to canvas covers weighs about one-tenth, so the weight of the plastic covers is definitely advantageous. The covers are quite economical and practical for indoor and outdoor use. They are . chemically inert and are not generally affected or penetrated by . alkalies . oils . acids . caustics . solvents . will remain flexible below zero degrees . will not mold, mildew or absorb moisture They can be obtained in various colors for identification purposes. Plastic covers do however, have a tendency to slip from highly piled merchandise and are not well adapted to bagging by rolling the edges.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting, #200, IFSTA, 1st ed. pp. 263-287

3-6 Salvage

3-6.4

Ref: pp. 13-24 #104
pp. 264-267 #200

TEACHING POINTS

SALVAGE COVERS

Plastic covers should not be utilized in areas where sparks or hot embers may be present because the cover will be easily penetrated.

TESTING

When a new shipment of salvage covers is received, one cover should be selected at random for a test known as the "lake test".

Salvage covers which have been in service and about which there is a doubt concerning their protective qualities may also be tested by the same method.

1. Spread the cover out flat on a smooth surface (floor or driveway).
2. Either roll the edges of the cover as when constructing a catchall or build a dike with 2- by 6-inch lumber around all edges. (The lumber dike provides a better test).
3. Fill the basin with water, preferably to a depth of approximately five inches.
4. Permit this arrangement to stand for at least 12 hours with the cover resting on the floor. After the water is removed there should be no signs of excess leakage on the underside.

Leakage should not be confused with normal bleeding or sweating.

MAINTENANCE

A good supply of salvage covers represents a considerable investment, and their care and preparation are very important.

With proper cleaning, drying, repairing and general care their span of service can be considerably extended.

CLEANING

Ordinarily, the only cleaning that is required for salvage covers is flushing with hose streams and scrubbing with a broom.

This cleaning process should be done on a clean floor or concrete, and the cover should be thoroughly rinsed after it is hung to dry.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting, #200, IFSTA, 1st ed. pp. 268-287

3-6 Salvage

3-6.4

Ref: pp. 13-24 #104
pp. 264-267 #200

TEACHING POINTS

SALVAGE COVERS

CLEANING

Covers that are extremely dirty and stained may be scrubbed with a mild detergent solution and then thoroughly rinsed.

Permitting salvage covers to dry while in a dirty condition is not a good practice because after carbon and ash stains have dried they are difficult to remove even with a detergent.

Wood ash and other products of burned materials may also have a chemical effect upon the fabric of the cover.

If it is necessary to postpone the cleaning of dirty covers because of other important activities, it is advisable to wet down the dirty covers so they will remain damp until they can be cleaned.

DRYING

Salvage covers should be thoroughly dry before they are folded and placed in service.

This practice is essential to prevent mildew and rot.

A well-ventilated place should be provided for drying, and the drying area should be somewhat isolated.

Salvage cover drying racks are sometimes provided at the rear of the apparatus floor.

The objection to outdoor drying of salvage covers is that t the wind tends to blow and whip the covers, producing excessive stress upon the covers.

INSPECTING

After salvage covers are dried they should be inspected for damage.

The cover is arranged in a line on the floor and three or four firefighters take their position alongside.

The cover is raised up and over the heads of the firefighte and each one watches for holes and torn places as the cover is moved slowly overhead.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA., 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting, IFSTA, 1st ed. pp. 263-287

3-6 Salvage

3-6.4

Ref: pp. 13-24 #104
pp. 264-267 #200

SALVAGE COVERS

INSPECTING

When the cover is well overhead, the watchers are in semi-darkness and any hole in the cover will show up clearly by the light filtering through from the opposite side.

When a hole is found, a wtacher holds the palm of the hand against the cover and another firefighter on the outside marks the hole with chalk.

REPAIRING

The developments made in filament and plastic adhesive tapes have changed the entire practice of mending covers.

It is no longer necessary to hand sew small holes and tears or patch them with various types cement or glue.

Any small hole or tear can easily be mended with a tape which adheres permanently to most materials. There are also iron-on patches available.

The special adhesive tape should be applied on a clean, dry surface for best results.

If the mending tape is applied to both sides of the surface, it will increase the bond for a stronger and more permanent seal.

This tape is waterproof and also stands up under normal heat or cold.

Polyethylene covers can also be mended with a plastic film tape without an adverse effect upon the waterproof qualities.

Large tears or holes may also be effectively repaired by using pieces of canvas and contact cement. Some firefighters, who have had experience both ways, find that this method id more durable and permanent then the adhesive tape method.

The following steps are a good recommended procedure to follow:

1. Use canvas patches and contact cement.

2. Extend the patch at least two inches beyond the hole or rip to insure a strong waterproof repair.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting, IFSTA #200 1st ed. pp. 263-287

3-6 Salvage

3-6.4

Ref: pp. 13-24 #104
pp. 264-267 #200

TEACHING POINTS

REPAIRING

3. Patch only one side of the simple puncture or a small rip.

4. Patch both sides of the cover for larger holes up to three inches in diameter and longer ripes.

   Holes more than three inches in diameter and very long ripes are difficult to repair; they usually require the service or professional repair shops such as a tent and awning company or shoe repair service.

   The best way to repair covers is with a close "herringbone" stitch. The thread and sewn area should then be waterproofed. When patches are required, they should be sewn with double seams and waterproofed.

5. Place tape over any stitching to insure a waterproof seal before returning cover to service.

PLACING IN SERVICE

Salvage covers that have been properly cleaned, dried, examined and repaired are now ready to be folded and placed in service or stock.

Every fire department should have a set of rules and regulations goverbing the care of covers. A set of rules is submitted here which can be revised or added to as a department may desire.

- For records and identification, all covers should be adequately marked. Inventory, service and maintenance records should be kept.

- Throwing covers from roofs, windows or other openings above the ground is strictly prohibited.

- Unnecessary walking on covers should be prohibited, and those covering floors and stairs should be picked up promptly to avoid damage. Frozen covers should not be walked on to force folding; rather they should be thawed, cleaned and dried before foldong.

- When firefighters are moveing covers over sharp projectic ns or from stock or machinery, care must be used to prevent tearing.

- Covers must be washed with soap and water when necessary and hung on drying racks with air circulation on both sid sides as soon as possible after returning from fires to prvent mildew. Covers must be thoroughly dry before folding for storage.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA 1st ed. pp. 268-287

3-6 Salvage

3-6.4

Ref: pp. 13-24 #104
pp. 264-267 #200

TEACHING POINTS

PLACING IN SERVICE

- After covers are dry, they must be examined for holes and mended before they are refolded and placed on the apparatus..
- Covers should be taken from the apparatus and refolded according to department policies.
- A receipt must be obtained for covers left at an incident. Any policies and charges should be outlined whe the covers are left.

A general rule for using covers is IF THERE IS ANY DOUBT AS TO THEIR NEED, COVER THE OBJECT. Any materials that are already wet are usually passed over so that available covers can be utilized to protect dry items.

SALVAGE KITS

For convenience during salvage work at fires, it is suggested that salvage equipment be arranged in kits.

Some desirable salvage kits are discussed and listed below:

METALWORKING TOOL KIT

Electrician's pliers
Chisel
Crescent wrench
Hammers
Hacksaw
Pipe wrenches
Applicable power tools
Hydraulic jack
Side cutter
Screwdriver and pliers

AUTOMATIC SPRINKLER KIT

Sprinkler head wrenches
Assortment of caps and plugs
6 sprinkler stoppers, tongs or wedges
Special bent wrenches to reach obscure valves
Pipe wrenches
12 standard sprinkler heads (assorted temperatures and types

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentilas of Fire Fighting, #200, IFSTA, 1st ed. pp. 263-287

Ref: pp. 13-24 #104
pp. 264-267 #200

SALVAGE KITS

MOP-UP KIT

Two mop handles and detachable mop heads
Two rubber squeegees with rubber in good condition
Water scoops
Two corn brooms
Mop wringer with bucket
Water vacuum
Submersible pump
Auger with reverse taper or
Electric drill with cutters up to six inches in diameter.

CLEAN-UP KIT

Four sponges
Two chmois
Bags of sawdust
Two scrub brushes
One whisk broom
Assortment of rags
Two buckets
Deodorizer
Scoop shovel.

4-6 Salvage

4-6.4

WOODWORKING TOOL KIT

One crosscut hand saw
One claw hammer
An assortment of nails
An assortment of screws
Tarpaper or plastic sheeting
Wood lath
Roof covering
One wrecking bar
One padlock and hasp
Applicable power tools
Screwdrivers
Heavy-duty stapler

ACCESSIBLE SPRINKLER EQUIPMENT

It is not practical to carry a large assortment of sprinkler heads in a fire department sprinkler kit because a sprinkler head cabinet is usually located near the sprinkler valve installation.

It is the fire department's responsibility to control the water flow and to see that the system is restored by those who are responsible for the building.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA 1st ed. pp. 263-287

Ref: pp. 13-24 #104
pp. 264-267 #200

Refer to Unit 12 Forcible Entry for type of tools required.

OTHER SALVAGE TOOLS AND EQUIPMENT

The tools and accessories which are recommended for salvage kits are associated with particular jobs.

Other tools which may be required include mauls, star drills or concrete cutting saws for draining masonry floors.

Forcible entry tools will be used in gaining entrance to locked areas or floors to perform salvage.

WATER CHUTES

Water chutes are devices to route water short distances through either doors, windows or other openings.

Usually these chutes are either made from an old or discarded salvage cover or they are constructed by improvised methods at fires.

Commercial water chutes are not common, but are available.

FLOOR RUNNERS

Floor runners are usually made from old salvage covers; however canvas van be bought for this purpose.

Runners should be about three feet wide and twenty to thirty feet long.

They should be rolled and tied with a quick release knot and carried in a convenient location on the apparatus.

DONOT apply floor runners over a floor furnace unless the furnace and pilot light are turned off.

Vinyl-laminated nylon floor runners are commercially prepared and are lightweight, flexible, tough, heat and water resistant, and easy to maintain.

BAGS OF SAWDUST

Sawdust may be used in salvage practices to take up moisture from floors and to build dikes to route water out of buildings.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA, 1st ed. pp. 263-287

OTHER SALVAGE TOOLS AND EQUIPMENT

PORTABLE PUMPS

Portable water pumps are used by many fire departments after fires to remove water form basements, elevator shafts and sumps.

Fire department pumpers SHOULD NEVER BE USED for this purpose because fire pumps are intricate and expensive machines and are not intended to pump the dirty, gritty water found in such places.

"S" HOOKS

Salvage covers may be secured with "S" hooks or other materials.

Salvage cover "S" hooks resemble meat hooks. In fact they may be purchased from meat-handling equipment suppliers.

"S" hooks should be correctly shaped and strong enough to be driven into any type of wall including masonry.

They are usually made from an eight inch piece of 1/4 inch or 5/16 inch cold rolled steel, shaped on an anvil and with both ends sharpened.

The larger size is recommended because it is more durable.

Refer to p. 23, #104 IFSTA 6th ed. for further information.

IKE-O-HOOK

The Ike-O-Hook is a versatile handcrafted device used in salvage and overhaul operations.

It is constructed of materials as used for the "S" hook.

The eyelet of the Ike-o-Hook can be placed over the point of a pike pole in the upright position allowing a salvage cover to be hung from the hook.

This device can also be used in forming smoke curtains or water chutes.

The Ike-O-Hook can also be used to elevate an extension cord of the floor by securing the eyelet and placing the extension cord over the hook.

The use of the Ike-O-Hook is only limited by the imagination and creativity of the user.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th Ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA 1st ed. pp. 263-287

3-6 Salvage

3-6.2
3-6.3

Ref: pp. 25-85 #104
pp. 267-282 #200

TEACHING POINTS

METHODS OF FOLDING AND SPREADING SALAVAGE COVERS

THE ONE-PERSON OR TWO-PERSON DESIGNATIONS REFER TO HOW MANY INDIVIDUALS IT WILL REQUIRE TO UNFOLD OR UNROLL THE COVER FOR USE. ALL FOLDS AND ROLLS ARE USUALLY PREPARED BY TWO PERSONS.

ONE-PERSON SALVAGE COVER ROLL

1. Lay the cover out in a flat position on a clean floor, with the finished (weather) side up. Place a fire-fighter at each end to fold one side at a time.

2. Grasp the cover with one hand midway between the center and the edge to be folded. using the other hand as a pivot, pull tightly with the folding hand and bring the fold over toward the center of the cover in a pleating fashion.

3. After the first fold has been placed at the center, grasp the open edge with the outside hand. Using the other hand as a pivot, stretch the cover tight.

4. Bring this outside edge over the center and place it on top and in line with the previously placed first fold.

5. Fold the other half of the cover in the same manner, by using steps 1, 2, 3, and 4. If the folds are not straight, they should be straightened.

6. Remove air from cover. The folds can be smoothed and air removed by using a yarstick to straighten the folds. A push broom may also be used to remove air from the covers.

7. Fold over about twelve inches at both ends of the cover to prevent the loose ends from flopping and to ,ake a neater roll.

8. Start the roll at either end and compress the first few rolls as tightly as possible.

9. As the roll progresses, tuck in the slack at the center when wrinkles appear.

10. The completed roll may be held secure by rubber bands or tied with cords.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA 1st ed. pp. 263-287

3-6 Salvage

3-6.2
3-6.3

Ref: pp. 25-85 #104
pp. 267-282 #200

TEACHING POINTS

PREPARING THE ALTERNATE DOUBLE ROLL METHOD

Steps 1-7 Refer to steps 1-7

Step 8 Instead of starting the roll at only one end, start the roll, from both ends and roll towards the center.

SPREADING THE ONE-PERSON ROLL

The one-person salvage cover roll may be carried on the shoulder or under the arm.

1. Start at one end of the object to be covered and while still holding the roll in the hands, unroll it sufficiently to cover the end.
2. Lay the roll on the object and continue to unroll toward the opposite end.
3. Let the rest of the roll either fall in place at the other end or arrange it in position.
4. Stand at one end and grasp the open edges where convenient, one edge in each hand.
5. Open the side of the cover over the object by snapping both hands up and out.
6. Open the other end of the cover over the object in the same manner.

SPREADING THE ALTERNATE DOUBLE-ROLL

1. Stand at the center of the object to be covered and place the double-roll on top.
2. Roll one end of the cover over an end of the object.
3. Roll the other end of the cover over the object and arrange both ends in position.
4. Follow steps 4 thru 6 of One-Person roll.

PREPARING ONE-PERSON SALVAGE COVER FOLD

1-6. Refer to One Person Salvage Cover Roll Steps 1-6.

7. With the cover folded to a reduced width, both persons grasp one edge of the cover and bring it to a point just short of the center. Each person uses their inside foot as a pivot to form the fold.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA 1st ed. pp. 263--287

3-6 Salvage

3-6.2
3-6.3

Ref: pp. 25-85 #104
pp. 267-282 #200

TEACHING POINTS

PREPARING ONE-PERSON SALVAGE COVER FOLD

8. Each person then uses one hand as a pivot and brings the folded end over and on top of the previous fold.

9. Continue, once again, and bring the folded ends over and on top of the previous fold at the middle.

10. Fold the other end of the cover toward the center and leave about four inches between the two folds.

11. The space between the folds now serves as a hinge as the operators place one set of folds on top of the other for the completed one-person fold.

SPREADING THE ONE-PERSON FOLD

1. Lay the folded cover on top of and near the center of the object to be covered and separate it at the first fold.

2. Select either end and continue to unfold by separating the next fold.

3. Continue to unfold this same end towards the end of the object to be covered.

4. Grasp the end of the cover near the center with both hands to prevent the corners from falling outward.

5. Bring the end of the cover into position over the end of the object being covered.

6. Unfold the other end of the cover over the object in the same manner.

7. Grasp the open edges of the cover at either end and prepar to open the cover as described for the one-person roll.

8. Open the sides of the cover over the object by snapping both hands up and out.

9. Open the other end of the cover over the object in the same manner.

PREPARING THE ACCORDION FOLD

1. Lay the cover in a flat position on the floor with the finished (weather) side up.

2. Turn all corners in about ten inches. Then, Kneeling place the outside hands on the end of the cover three feet from the edge, reach over with the inside hands and grasp the turned end corners. (The corners are turned in only to provide a handhold, they are flat in the final fold).

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA 1st ed. pp. 263-287

3-6 Salvage

3-6.2
3-6.3

Ref: pp. 25-85 #104
pp. 267-282 #200

TEACHING POINTS

PREPARING THE ACCORDION FOLD

3. Working together, bring the outside edge to the center.

4. Further reduce the width of the cover by grasping the folded edge, pull taut and bring to the center of the cover.

5. Repeat steps 2, 3, and 4 working on the unfolded half of the cover.

6. Remove excess air in cover with push broom or yardstick.

7. At one end of cover, measure in about nine inches, the span of the outside hand to determine the width of the pleat.

8. Place thumbs of outside hands under the coverand, with the inside hands spaced about 18 inches, bring the first pleat even with the end of the cover.

9. Continue making accordion pleats until the cover is completely folded.

10. Secure the bundle to protect it while in storage on the apparatus.

SPREADING THE ACCORDION FOLD ONE-PERSON THROW

1. Center the folded cover over the forearm with the open edges toward the body.

2. Lock in the two bottom pleats with the ring and little fingers and hold the index and middle fingers tightly pressed against the remaining pleated edges.

3. Grip the three top pleats nearest the body with the thumb and fingers of the throwing hand.

4. Hold the cover firmly, and flip the three top pleats over the back of the hand and wrist as the arm is moved into a throwing position. Use the index and middle fingers of the opposite hand as a brake.

5. Throw the top pleats directly overhand. Retain the grip on the bottom pleats, and apply pressure with the index and middle fingers as necessary to control speed of the throw.

6. Open the cover so that it envelops the material, and tuck in all loose edges at the bottom.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA 1st ed. pp. 263-287

3-6 Salvage

3-6.2
3-6.2

Ref: pp. 25-85 #104
pp. 267-282 #200

TEACHING POINTS

SPREADING THE ACCORDION FOLD TWO-PERSON COUNTER PAYOFF

1. Hold the cover on the forearms, with the fingers grippir the two bottom pleats, while the second person grasps the top layer with both hands.
2. Extend the cover and hold the arms high as the second person walks backward.
3. Position the extended cover gently over the object.
4. Open the cover and tuck in the edges around the base.

PREPARING TWO-PERSON SALVAGE COVER FOLD

1. With the cover stretched lengthwise and clean side down each person grasps the end of the cover at its center or at its center grommet and then pulls the cover tightly between them. Raise this center fold high above the floor and shake out the wrinkles to form the first half fold.
2. By holding the cover tight between the two operators it may be swung from side to side and acrefully spread upon the floor. If any wrinkles occur they should be removed.
3. While still grasping the cover near its center grommet, place inside foot at the center of the half fold and thus make a pivot for the next fold.
4. Stretch that part of the cover being folded tightly between the operators. Make the quarter-fold by folding the open edges over the folded edges.
5. One person should secure one end of the quarter-fold while the other person grasps the opposite end and shakes out all the wrinkles.
6. The person holding the end of the cover snaps the bottom portion forward and carries the quater-fold to their partner. While the partner is kneeling, the quarter-fold can be directed into position.
7. Place one end on top of the other. With a person at each end, the cover can be lifted and pulled taut to remove any wrinkles or gathering.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

ref: Essentials of Fire Fighting #200, IFSTA 1st ed. pp. 263-287

3-6 Salvage

3-6.2
3-6.3

Ref: pp. 25-85 #104
pp. 267-282 #200

TEACHING POINTS

PREPARING TWO-PERSON SALVAGE COVER FOLD

8. The two operators then grasp the open ends and use their inside foot as a pivot for the next fold.

9. Bring these open ends over and place them on top of the folded center fold.

10. Continue this folding process by bringing the open ends over to the folded end. During this fold the free hand may be used as a pivot to hold the cover straight.

11. Complete the operation by one more fold in the same manner. Bring the open ends over and to the folded end using the free hand as a pivot during the fold.

SPREADING COVERS/BALCON THROW

1. Stretch the cover along one side of the object to be covered and separate the last half-fold by grasping each side of the cover near the ends.

2. Make several accordion folds in the hand that is to make the throw and place the other hand about midway down the end hem.

3. pull the cover tightly between the operators and prepare to swing the foldad part down, out, and then up in one sweeping movement so as to pocket as much air as possible.

4. When the cover is as high as the operators can reach, the accordion folds may be either pitched or carried across the object, an action which causes the cover to float over the object.

5. As the cover is floated over the object, guide it into position and straighten for better water runoff.

SPREADING COVERS/SINGLE-EDGE SNAP THROW

1. Stretch the cover along one side of the object to be covered and drop the edge which is next to the object.

2. Bunch the other edge into both hands of each operator so as to form a bulk to be thrown. Pull the cover tightly between the operators and dip the folded part toward the floor readt for the upward thrust.

3. Continue in one movement by snapping the cover upward as high as the operators can reach.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA 1st ed. pp. 263-287

3-6 Salvage

3-6.2
3-6.3

Ref: pp. 25-85 #104
PP. 267-282 #200

TEACHING POINTS

SPREADING COVERS/SINGLE-EDGE SNAP THROW

4. When the cover is higher than the objects to be covered, each operator snaps the folded part from their hand across the object.

5. When the cover is well over the object, guide it into position and straighten for better water runoff.

SPREADING COVERS/DOUBLE-EDGE SNAP THROW

1. Remove the folded cover from the carrier's shoulder and stretch it between the objects to be covered.

2. At a convenient point on the cover edges, bunch or fold both edges of the cover into the hands of each operator leaving approximately three or four feet of the cover between the hands. The cover, in this position, does not touch the floor.

3. Pull the cover tightly between the operators, bringing the hands close together and with a semi-squatting movement, dip the cover towards the floor ready for the upward thrust.

4. Continue in one movement by snapping the cover upward. Hold the hands togethre during the upward thrust to avoid catching an air pocket in the cover. When the cover is slightly higher than the objects to be covered, each operators snaps their hands outward. Each operator should follow through with their hands to guide the cover.

5. Guide the cover over and down depending upon the position and length of the object to be covered.

SPREADING COVERS/CROSSOVER THROW

1. Stretch the cover along one side of the object to be covered and bunch or roll both edges of the cover into the hands of each operator.

2. The operator whose right arm is next to the object crosses their arms to hold the bunched edges.

3. From the crossed arm position, bring the outside fold over the inside fold and cross at the middle. NOTE: This arrangement puts the cover in position for each operator to throw with their right hand. Each operator then moves the left hand toward the center of the cover, one grommet. This shortens the length of the folded edge and aids in keeping it taut.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA 1st ed. pp. 263-287

3-6 Salvage

3-6.2
3-6.3

Ref: pp. 25-85 #104
pp. 267-282 #200

TEACHING POINTS

SPREADING COVERS/CROSSOVER THROW

4. Pull tightly with the left hands and use this folded edge as a booster as each operator dips the cover toward the floor ready for the throw.

5. Continue in one movement by pitching the cover upward with the left hands and toward the object with the right hands.

6. When the folds from the right hand are over and across the object, bring the folds in the left hand down alongside.

COVERING SHELVING

Shelving is frequently built directly to the wall and it may be necessary to fasten the cover to the wall or top shelf in some manner.

It is not advisable to use the shelving as a ladder to reach the top.

This added weight applied to the front may cause the shelving to topple forward, causing injury to firefighters and also damaging the merchandise.

When covering shelves, a short ladder should be placed at each end of the cover.

After a salvage cover has been stretched between the two ladders, the firefighters carry one edge of the cover up their respective ladders to place in into position.

The top edge of the cover can sometimes be draped over the top shelf and held in place by articles of sufficient weight which may be found nearby.

It may be difficult to keep water cascading down a wall from getting to the goods on a shelf from behind.

The cover may be rolled on top of the shelf and forced between the wall and the shelving, or newsprint may be pressed against the dampened wall and angled into the cover allowing the water to follow it raher than the wall.

If the shelving to be covered is quite high, the cover may be opened the short way. To do this, the person with the cover on their shoulder takes either pair of single edges and gives the top single edge to their partner and garsps the other single edge theirself. The cover is then opened the standard way and will be opened the short way as it unfolds.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA 1st Ed. pp. 263-287

3-6 Salvage

3-6.2
3-6.3

Ref: pp. 25-85 #104
pp. 267-282 #200

HANGING COVERS

A number of ways can be used to hang covers to protect stock, form barriers or reduce water damage.

"S" hooks, Ide-O-Hooks, nails through grommets, or cords can be used.

When overlapping covers for extended protection, the overlap should be one grommet past the corner.

REMOVING SALVAGE COVERS

When removing salvage covers, exercise caution and fold the cover onto itself to prevent snagging on sharp projections and to prevent damage to the materials that were covered.

IT IS NEVER advisable to pull a salvage cover from material.

When a salvage cover is picked up after a fire, small amount of debris and water usually remain on the cover.

This debris and water should be contained within the cover. while it is being carried outside so that parts of the building unaffected by the fire will not be soiled.

The procedure is accomplished by two persons as follows:

1. Working from the outside edges, systematically reduce the size of the cover by folding the corners to center.
2. Continue to reduce the size of the cover until one perso can remove it without causing damage.
3. Take outside where the water and debris can be removed.
4. Shake the covers out and refold in front of the premises to insure valuable items were not accidentally removed i in the covers.

4-6 Salvage

4-6.1
4-6.2

IMPROVISING WITH SALVAGE COVERS

IMPROVISED SUMP

The improvised sump is designed to serve a variety of purposes. It may be used used to supply water to a pumper when threads are damaged or fittings are not available to make hydrant connections.

The sump is an aid in supplying water from tankers in rural areas where discharge is limited and water has to be transported to the fire.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA 1st ed. pp. 263-287

4-6 Salvage

4-6.1
4-6.2

Ref: pp. 25-85 #104
pp. 267-282 #200

TEACHING POINTS

IMPROVISED SUMP

The sump can also serve to trap and hold water in salvage operations.

Materials required:

20 foot ladder or 24 foot extension ladder and a matching roof ladder so that sections will nest between beams of the other sections.

A pike pole may be used if a roof ladder is not available.

1. Place the ladders and/or pike pole in a triangle, and lash the rungs and beams tightly together with rope or cord.

2. Center a salvage cover on this framework, position the cover on the inside so that it fits snugly against the framework and the ground, and tuck the excess underneath. Use two large covers and a leakproof seal if the framework is too large for a single cover.

CATCH BASIN

1. Obtain suitable materials from the building contents such as chairs, tables, bedsprings, stepladders or stock to form a framework large enough to contain the anticipated amount of water.

2. Spread a salvage cover to form the basin, tuck the loose edges underneath, and lash the components together to prevent spreading. Arrange for a suitable method of removing the water as the basin fills.

CATCHALL

A catchall is constructed from a salvage cover which has been placed on the floor to contain relatively small amounts of water.

1. With the cover spread upon the floor, roll the two sides inward approximately three feet.

2. Lay the ends of the side rolls in at a 90 degree angle to form the corners of the basin.

3. Roll one end into a tight roll on top of the side roll and form a projected ear. Using the outside hand to lift the edge roll, tuck the end roll under to lock the corners.

4. Roll the other end in a like manner and lock the corners.

INSTRUCTORS NOTES	TEACHING POINTS
Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138 Ref: Essentials of Fire Fighting, #200, IFSTA pp. 263-287 4-6 Salvage 4-6.1 4-6.2 Ref: pp. 25-85 #104 pp. 267-282 #200 Refer to p. 76 #104 Salvage and Overhaul for examples.	Catch basins and catchalls can be easily emptied by use of a submersible pump. WATER CHUTES One of the most practical ways of removing water that comes through the ceiling from upper floors is by chutes. Chutes must be placed high near the ceiling opening or the or the splash of a long drop will cause water damage. They are generally constructed on the floor below to drain water through windows or doors. Chutes can be formed by rolling two pike poles in a salvage cover. By covering a door removed in the building with a salvage covers with the edges rolled in and under that is properly secured. A salvage cover is partially unfolded in order to roll the edges which are inverted and placed between the beams of a ladder. On stairways the stair bannister can be used to support one side of the chute while the other side is rolled under. The sides of a salvage cover can be rolled under and placed on a stairway as a chute as well. SPLICING COVERS When objects that are too long for one cover need to be covered, or when long chutes or catchalls need to be made, it is necessary to splice covers with airtight joints. Also, when water must be routed from a catchall into a chute, the water must be prevented from running back under the catchall. 1. Unroll one corner of a catchall and spread. 2, Unroll one end of a chute and fold it back over itself about 12 inches. 3. Lift corner of catchall and unfold chute beneath. 4. Roll sides of catchall corner and end of chute back together.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

Ref: Essentials of Fire Fighting #200, IFSTA 1st ed. pp. 263-287

Ref: pp. 25-85 #104
pp. 267-282 #200

SPLICING COVERS

When a long chute is necessary and water must flow over a joint, it may be folded as described below.

1. Unroll the edges of the uppermost cover to expose the end and fold this end back upon itself about 20 inches.
2. Lap the second or underneath cover over this fold about ten inches and fold the remaining ten inches of the uppermost cover back over the second cover.
3. Fold the entire joint of both cover ends down underneath (second cover).
4. Press the joint smooth so that water will flow freely over the lap joint.
5. Roll the edges of the second cover in line with the rolled edges of the uppermost cover for the completed splice.

If the joint is to hold or route water, fold the edge of one cover back over itself about 18 inches toward the direction the water is coming from and bring the edge of the second cover over and even with it.

Then roll or fold the two covers tightly together.

The proper method of folding is to make two eight-inch folds with both covers back towards the second cover or in the direction of water flow.

The folds should be pressed flat.

CONTROLLING SMOKE, DEBRIS AND WATER

Salvage covers can be used effectively as smoke curtains, debris curtains during chimney fires, as debris carriers, to control water by covering hallways and sprinklers or as dikes.

DIKES

A cover should be opened half way, placed in the opening with the open edges away from the water, and folded covers stacked inside to form a dike. The original cover is then folded over the piled covers to form a dike.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-6 Salvage

4-6.3

Ref: pp. 87-99 #104

TEACHING POINTS

HANDLING WATER IN BUILDINGS

After the protection of building contents, the concern over excess water is normally the next most important salvage function.

A basic premise of fire fighting is that all personnel should be aware of the additional weight placed in a building by water.

Where none of the water is being vaporized because it is not being applied on or in an area of sufficient heat, and the application is from a 250 gpm nozzle, simple mathematics indicate that just over a ton of water per minute is being added to the building.

Obviously, continued application of a number of streams into a building, with most of the water remaining in liquid form, will rapidly increase the rate.

In most buildings accumulated water will work its way to the lowest level.

Water in lower levels could endanger machinery, utilities, stored merchandise, heating ventilating and elevator equipment.

ROUTING WATER

There are numerous avenues that can be used to route water.

Use of floor drains and sewer openings cause the least additional damage.

Stairways and chutes to the outside are convenient.

Scuppers, where available, will clear floors or elevator and other shafts may be used.

Walls may be breached, holes cut in floors, or pumps used in addition to improvising methods.

Methods of draining water from basements or shafts involve either draining or pumping.

Drains in basements are often clogged by debris or covered with stored merchandise.

If drains are controlled by valves or if the basement has a switch for manually activating the pump, these should noted during preplanning and indicated by signs suspended from the ceiling. The drains should also be indicated so that they may be kept unclogged.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-6 Salvage

4-6.3

Ref: pp. 87-99 #104

ROUTING WATER

Excess water on upper floors must be collected and removed in a way that will do as little damage as possible. Here the ability, knowledge and ingenuity of firefighters may be taxed to the utmost because of the many different conditions found in this are of salvage work.

A complete knowledge of all tools and salvage equipment and the techniques of using them is essential.

Since water seeping through a floor will have a tendency to follow a lighting fixture to the floor below, it is advisable to remove the fixture and place a hole next to the electrical box and in the floor over it.

After water removal, the fixture can be replaced covering the hole in the ceiling.

Water following a pipe through a floor can be handles by tightly binding a salvage cover around the pipe with twine and bagging the flooor.

When feasible catchalls should be constructed to catch the water.

If, however, the amount of water is large or the flow is continous, the water will have to be channeled out of the building with chutes or dikes.

Chutes may be contructed of salvage covers and a framework either of ladders, a stairway, or contents of the building.

Dikes may be made of salvage covers or sawdust. Sawdust is also used to absorb standing water that cannot be channeled to a drain.

Another method of draining water is through the soil pipes installed in a building.

This can be done by:

a. removing a toilet bowl

b. removing a cleanout plug

or

c. breaking a vertical soil pipe at floor level.

Remeber that sewer gas leaking from a broken soil pipe can be a problem.

INSTRUCTORSN NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-6 Salvage

4-6.3

Ref: pp. 87-99 #104

TEACHING POINTS

ROUTING WATER

Toilet bowls can be easily lifted after using a wrench to loosen fastening devices holding the base to the floor.

By rocking the bowl after the fasteners have been removed, the wax or putty seal can be broken and the bowl lifted out of place.

If the fasteners are rusted and the water is deep, it is better to break the toilet causing less damage than to allow the water to continue to build up and spread.

A wrench will be needed to remove cleanout plugs in soil pipes.

Tapping the edge of the bell may help if plugs are hard to start.

If these methods fail, a soil pipe extending from the floor can be broken off at floor level to drain the water.

When any of these procedures are followed, screens or drain guards should be used to prevent large [illegible] debris from entering the drain pipe.

One of the objectives of salvage work is to remove excess water to the exterior of a structure.

Sometimes this can be accomplished by the use of:

- sewer pipes
- catch basins
- drip tubs
- stairway chutes

or other means.

But if none of these methods are practical during a particul instance, the most effective method then involves cutting holes in upper floors and diverting water through windows drains or chutes.

Before a hole is cut in a floor, marchanidise or furnishings should be covered and chutes constructed in the area below.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-6 Salvage

4-6.3

Ref: pp. 87-99 #104

TEACHING POINTS

ROUTING WATER

The hole should be placed so that the water will flow onto a chute that extends through an exterior window or door.

The hole in the CEILING ABOVE the chute should be cut FIRST, and it should be somewhat larger than the hole in the floor above so that water will not accumulate between the floor and the ceiling.

REMOVING WATER WITH PUMPS

It is not uncommon for various quantities of water to partially fill the area below ground level.

These sumps or basements may be provided with a drain into a domestic sewer, but the drain may be clogged with debris.

Fire Departments are not normally prepared to remove water from a large number of properties when storms or floods cause excessive damage.

Regular fire department pumpers should NEVER be used for pumping water from buildings for these three reasons:

1. fire apparatus is too expensive to be used for this purpose and relatively inexpensive portable pumps are available.
2. the debris-laden water is likely to damage fire department pumps. (diaphragm and submersible pumps are designed for this).
3. fire apparatus should be kept available for fire fighting.

It is the responsibility of the fire department, however, to remove from buildings water which has been used to extinguish the fire.

Portable water pumps and diaphragm pumps of various capacities, which are powered by small internal combustion engines are ideal for this purpose.

The electric submersible pump can also be used for dewatering.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul
#104, IFSTA, 6th ed.
pp. 1-138

4-6 Salvage

TEACHING POINTS

ROUTING WATER

Small quantities of water can be removed from floors in any are by using a portable water vacuum.

Brooms and squeegees are used to sweep or push water to doorways, scuppers, stairs or other points of drainage.

Care must be taken, when moving water in this manner, to prevent damge to buildings and contents. When necessary objects that may be damaged should be protected with salvage covers or removed from the area of operation.

Brooms are also used to sweep debris during overhaul operations.

Buckets, Mops and Shovels/Buckets are used to catch water dripping from upper floors and ceilings, to bail catch basins, and to carry water and debris from buildings.

Some departments use standard custodian mop buckets with attached wringers to facilitate mopping operations.

Mops are used to absorb water and to clean and dry floors.

Scoop shovels are used to pick up water, sawdust and debris.

Sawdust is used to absorb water and to form dams and dikes.

Sawdust dams and dikes may be used to control flowing water or to direct it to a drainage point.

Sawdust is also used to form seals between salvage covers and the floor.

USING HOSELINES FOR ROUTING WATER

An extended length of booster line may be used as a temporary dike or a long continous squeegee for clearing an area of debris and water.

Larger hose lines may be used as dikes for routing water when the number of covers is limited or when there are no covers at all.

Two lines can be used parallel forming a chute, or used singly as a dike, or used as a catch basin.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-6 Salvage

4-6.3

Ref: pp. 87-99 #104

See also p. 22 and handout #16, Unit 11, Sprinklers/ Standpipes/Detection Systems

WATER CONTROL FROM SPRINKLER HEADS

Considerable time may elapse from the activation of a sprinkler head until authorization to close the main sprinkler valve is received.

Extensive water damage can result unless s flowing sprinkler head is plugged when it is no longer needed for fire extinguishment, but before the main valve can be closed.

Obviously a firefighter will get wet during the operation and should wear full protective clothing.

Fire department ladders should be used to reach the flowing sprinkler head.

There is no set rule for positioning the ladder, but in either case another firefighter should hold the ladder in position.

Most wedges are designed so that they can be driven into position with the heel of the hand.

If the wedge is properly made, practically all of the water flow can be controlled by the driven wedge.

Wedges can have a band of rubber placed on them to improve their operation.

Sprinkler tongs, are to some extent, more positive in their ability to hold back water.

If properly applied, the rubber or neoprene stopper will permit no dripping from a secured sprinkler head.

Sprinkler control valves should NEVER be closed unless the fire is definitely under control.

When the sprinkler system must be shut down to control water flow, the firefighter already detailed to the appropriate valve is notified.

Floor or sectional valves should be used to control the flow if possible.

Immediately after the correct valve has been closed, drains (main and auxilliary) must be opened.
This allows water remaining in the system to flow harmlessly to the exterior of the building rather than into the building through the open heads.

The firefighter assigned to close a sprinkler valve must remain at the valve so that it may be quickly re-opened.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-6 Salvage

4-6.3

Ref: pp. 101-109

1. Helps locate hidden fires
2. Helps prevent rekindle.
3. Helps determine cause of fire.
4. Aids recognizing and preserving evidence of arson.
5. Helps prevent unnecessary damage.
6. Permits removal of original fire cause.
7. Aids in placing the building in safe condition.
8. Helps improve public relations.

OVERHAUL PROCEDURES

VALUE OF PROPER OVERHAUL

The application of proper overhaul techniques provides variable results.

These results are important directly to the fire service and indirectly to the public.

Although the fire service obviously profits most from proper overhaul practices, there is a hidden value to the public which is often realized through conviction of arsonists, reduced insurance costs and quicker return to production schedules.

Some of the values of overhaul are:

HELPS LOCATE HIDDEN FIRES

Proper overhaul involves a systematic handling of contents, merchandise and debris to accomplish many purposes.

One of these purposes is locating hidden fires so that they may be extinguished, thus preventing further damage.

Hidden fires can be detected by:

- touch
- smell
- sight

HELPS PREVENT REKINDLE

Proper overhaul does not insure that a fire will not rekindle, but it greatly reduces the possibility.

Its practice enables firefighters to detect those materials which are more likely to rekindle, remove them from the premises and throughly soak them.

Where it is unsafe to fully dig through the rubble, or debris is of such quantities that mechanical devices will be required, wetdown lines and crews should be put in service to control any flare-ups and avoid a rekindle.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-6.Salvage

Ref: pp. 101-109 #104

OVERHAUL PROCEDURES

HELPS DETERMINE CAUSE OF FIRE

Proper overhaul will aid in determining the cause of a fire.

The firefighters ability to recognize the cause is another problem.

A fire cause involves two conditions:

. the fuel supply

and

. the heat source

A fire results when a "heat source" hazard and a "fuel source" hazard are permitted to come together in the presence of oxygen.

During overhaul both the fuel involved and the heat source that caused the ignition should be sought to determine the cause of the fire.

Only by including both parts of a fire cause in all reports can really meaningful statistics be compiled for use by fire prevention personnel.

AIDS RECOGNIZING AND PRESERVING EVIDENCE OF ARSON

Determining the cause of fire goes hand-in-hand with recognizing and preserving evidence of arson.

Proper overhaul will permit critical evidence to remain untouched and undisturbed, and it will also permit the safeguarding of other evidence that cannot be left at the scene of the fire.

All firefighters should be familiar with the latest legal rulings on inspections and gathering information for the cause of the fire.

HELPS PREVENT UNNECESSARY DAMAGE

Successful overhaul should follow a step-by-step procedure or pattern since a systematic approach will be beneficial.

Unnecessary damage to the building and its contents can be avoided by removing heavy water-soaked materials immediately.

In many cases items can be removed from the building,

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-6 Salvage

4-6.3

Ref: pp. 101-109 #104

OVERHAUL PROCEDURES

for final extinguishment such as is commonly done with mattresses and stuffed furniture.

Overhaul can proceed from:

- top floors down
- interior rooms outward
- from a number of entrances simultaneously

to eliminate additional damage as debris is hauled through an area.

Restoring heat, covering open windows,or roofs, and draining flush boxes or water pipes in unheated areas are all overhaul functions which help prevent unnecessary damage.

PERMITS REMOVAL OF ORIGINAL FIRE CAUSE

A routine system of overhaul not only helps determine the cause of the fire, but it pinpoints the origin and permits the removal of items which could cause recurrence.

A recurrence can best be explained by example:

Suppose the cause was determined to be a faulty extension or cord which ignited a nearby curtain.

This finding affords an opportunity to remove the faulty cord prohibiting another fire.

AIDS IN PLACING THE BUILDING IN SAFE CONDITION

Numerous unsafe conditions may exist in and around the fire building after the fire has been controlled.

In order to work inside or near the structure it may be necessary to correc these.

In some cases, dangerous conditions will not permit fire-fighters to enter the building and do a complete overhaul.

In other cases, demoloition may be the only feasible answer

The correction of unsafe conditions such as:

- hazardous processes
- structural defects
- unstable objects
- damaged utilities
- damaged contents
- open pits

presents a challenge to every fire department.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-6.8Salvage

4-6.3

Ref: pp. 101-109 #104

OVERHAUL PROCEDURES

HELPS IMPROVE PUBLIC RELATIONS

Public relations is not a planned procedure by which personal gain is achieved, nor is it a "packaged service" obtainable for a price.

The price that is paid by fire departments for good public relations is measured by their efforts to cooperate with property owners, law enforcement officers, utility companies, city officials and the public in general.

OVERHAUL EQUIPMENT

Overhaul tools, equipment and accessories generally consist of the normal complement of fire department tools such as:

- forcible entry tools
- small hoselines
- ropes
- lights
- portable extinguishers

In addition to these items, overhaul kits are frequently established and carried.

ARSON KIT

An arson kit is to be used for collecting, protecting and preserving evidence of intentional fires and to help in determining the cause of fire.

The following suggested equipment is recommended for a basic kit:

Squares of glass
Assortment of metal containers
Magnifying glass
Assorted large-mouth jars
Plastic bags
Sealing tape
Bulb syringe
Flash camera
Envelopes
Scrapers
Flashlight
Bottles
Labels

SAFETY KIT

Warning lights
Carbon monoxide detector
Combustible gas indicator
Normal & chemical flares
Signs and notices
Explosion-proof flashlight
Small rope

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-6 Salvage

4-6.3

Ref: pp. 101-109 #104

TEACHING POINTS

DOOR, WINDOW OR ROOF REPAIR KIT

Assortment of roofing and masonry nails
Heavy-duty stapler and staples
Adequate supply of roofing paper
One hammer hatchet
One claw hammer
One linoleum knife
Small bundle of wood lath
Roll of polyethylene plastic

DEBRIS HANDLING EQUIPMENT

A safe efficient method must be provided for transporting materials to an overhaul location.

The method of transporting can vary from hand carrying to the use of loaders and other mechanical devices.

Debris may be placed in carryalls, empty containers, cans or old salvage covers to protect the areas through which it is transported.

Valuable articles should be moved from the path of transport, and other items should be protected with floor runners and salvage covers.

Pike poles, rubbish hooks, shovels, hay hooks and similar standard tools are readily adaptable to debris handling operations.

Two pieces of equipment specially designed for debris handling are carryalls and metal baskets.

Mattress chains can be used to remove bedding and similar materials that can be folded.

CARRYALL

This carrier is approximately six or eight feet square, depending on the needs of the department.

For carrying purposes, handholds are provided by lashing a sash cord through eyelets which are reinforced by grommets around the edges.

The handholds permit the carrier to be puckered, thus forming a bag.

Such a carryall is useful in carrying debris, catching debris and providing a water sump for immersing small burning or smouldering objects when they cannot be easily removed from the building.

INSTRUCTORS NOTES	TEACHING POINTS
Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138	DEBRIS HANDLING EQUIPMENT
4-6 Salvage	Making a carryall six or eight feet square has the added advantage of permitting its use as a mattress carrier.
4-6.3	When used for this purpose, it should be wetted down before a burning mattress is loaded.
Ref: pp. 101-109 #104	A safer method is to insert an asbestos blanket inside the carrier which will reduce the possibility of burning holes in the canvas of the carrier.
	A mattress can then be carried out of the building without the danger of scattering smouldering cotton or cloth about the premises.
	MATTRESS CHAINS
	Mattress chains help secure a rolled mattress for easier removal.
	A partially burned mattress can be difficult to handle without the correct equipment.
	In residential occupancies mattresses frequently must be removed to the outside for complete extinguishment.
	Mattress chains or straps are a great assistance in the removal process.
	Mattress chains are usually made of light chain or flexible cable, eight feet in length and equipped with hooks or similar locking devices to keep them tight around a rolled mattress.
4-17 Overhaul	SEARCHING FOR HIDDEN FIRES
4-17.1	After assuring safety, one of the first routine operations will be searching for hidden fires.
Ref: pp. 111-125 #104	It may be true that sometimes a rekindle is due to inadequate overhaul, but there are also conditions where rekindle is do to circumstances beyond the control of the fire department.
	There are certain types of occupancies where complete extinguishment is extremely difficult, and a continued watch must be maintained over the fire area for a prolonged period.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-17 Overhaul

4-17.1

Ref: pp. 111-124 #104

CONCEALED SPACES

Methods of opening areas of buildings where fire fires may be concealed were covered in Unit 12 Forcible Entry.

It is the purpose here to discuss these concealed spaces from the stanpoint of where to search.

Some of the more common concealed spaces in buildings are in:

- walls and partitions
- above ceilings-below floors
- attics or cocklofts
- in basements
- in air shafts
- in pipe chases and
- ducts.

Since it is extremely difficult to outline all the operatio that may be performed in searching for hidden fires, only the more fundamental conditions will be discussed.

CONSIDER BUILDING COLAPSE BEFORE OVERHAUL

REMEMBER Before staring a search for hidden fires, determine the safeness of the building.in the area to be overhauled.

The degree of intensity which the fire attained during burning

and

the amount of water used during its control are two important factors that alter the condition of the building.

The first determines the extent to which the structural components have been weakened

and

the second determines the additional weight on floors and walls becuase of unremoved water and the absorbent qualities of stock.

Consideration given to these two factors may prevent unnecessary loss of life during overhaul because of building collapse.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-17 Overhaul

4-17.1

Ref: pp. 111-125 #104

SEARCHING FOR HIDDEN FIRES

CONCEALED SPACES

An important objective in searching for hidden fires, should be to make a systematic and careful check to determine whether fire extended to other areas of the building.or to other buildings.

When floor beams have burned away at the ends where they enter a party wall, it is a good policy to carefully overhaul the ends of the beams.

When fire has burned around windows and doors, ther is the possiblity of fire remaining within the casings.

To locate this fire requires the removal of the facings to assure complete extinguishment.

1. Remove the top facing
2. Remove the side facings
3. Remove the window frames
4. Cut the sill at the center and cut it out
5. Pry casing inwards
6. Remove entire casing

Another point 6f possible trouble is behind the cornice.

When fire has burned around a combustible roof or cornice, it is advisable to open the cornice and inspect for hidden fires.

When concealed spaces below floors, above ceilings or within walls and partitions must be opened during the search for hidden fires the following suggested procedure may be used:

1. Roll up the floor covering
2. Move furnishing in room to a location where they won't be damaged
3. Remove only enough ceiling, wall or floor to insure complete extinguishment

Hidden fires in concealed spaces can often be detected by:

- feeling with the hand
- by smelling
- by discoloration
- by blistering
- by smoke

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-17 Overhaul

4-17.1

Ref: pp. 111-125 #104

CONCEALED SPACES

Checking around plumbing fixtures for extension into the wall should not be overlooked.

Also, insulation material will often harbor hidden fires for a prolonged period, a condition that requires that these materials be removed in order to locate the hidden fire.

Fires in concealed spaces may be detected by devices recently adapted for use by the fire service which convert radiation energy in the form of heat into an electrical signal for display.

More specifically, these infrared scanners operate on the amount of infrared energy which is radiated from objects based on their temperature.

UNDER DEBRIS AND AROUND MERCHANDISE

Too much emphasis cannot be placed upon the importance of searching for hidden fires under debris and around merchandise.

Because of the absorbant qualities of the materials, such as paper, wood, fabrics and insulation that are likely to be in piles of debris, it is consider to be the best policy to remove the material from the building whenever possible.

Not only are such materials a dangerous hazard because of the added weight and expansion, but it is frequently difficult to determine the exact location of the hidden fire within the pile.

This condition is particularly true if the pile of debris is large or contains baled goods.

Fallen structural members of the building often form voids in which hidden fires smoulder and later rekindle.

EXTINGUISHING HIDDEN FIRES

5-12 Overhaul

5-12.1

Ref: pp. 115-118, #104

It is very essential for firefighters to wear proper protective clothing including positive-pressure self-contained breathing apparatus while performing overhaul and extinguishing hidden fires.

It is particularly important for metal insoles to be worn inside boots, and departments should require gloves and goggles to be worn as added precautions.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

5-12 Overhaul

5-12.1

Ref: pp. 111-125 #104

TEACHING POINTS

EXTINGUISHING HIDDEN FIRES

Charged hose lines should always be available during the extinguishment of hidden fires although the same caliber of lines as were used to bring the fire under control are not always essential.

Fire department pumpers can often be disconnected and returned to the station, but one or more 2-1/2 inch hydrant lines should be left for standby.

Smaller 1-1/2 inch lines are often extended from these 2-1/2 inch lines to provide better mobility throughout the building.

Regardless of the size of the hoseline, the nozzle should be placed so that if accidentally opened it will not cause additional water damage.

Since a straight stream can scatter material, a limited fog stream is used during overhaul.

Quite frequently small burning objects are uncovered during overhaul.

Because of their size and condition, it is better to dunk the entire object in a container of water than to try drenching it with a stream of water.

Bathtubs, sinks, lavatories and washtubs can all be useful for this purpose.

The previously described rubbish carrier (carryall) can be filled with water and used for this purpose.

Portions of burning clothing, pillows, draperies and parts of upholstery may also be more easily handled by dunking them in water.

Larger furnishings, such as mattresses, overstuffed furniture and bed clothes, should be removed to the outside where they can be easily and thoroughly extinguished.

OVERHAUL OPERATIONS AROUND DUCT SYSTEMS

Numerous duct systems are installed in buildings today ranging from the kitchen stove exhaust system to sophisticated ventilation systems in multi-storied buildings.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

5-12 Overhaul

5-12.1

Ref: pp. 111-125 #104

TEACHING POINTS

OVERHAUL OPERATIONS AROUND DUCT SYSTEMS

These systems may be used for:

- heating
- cooling
- removeing dust or flammable vapors
- disposing of waste or excess material
- transferring products

These duct networks, if not adequately protected, can extend the fire or associated damages.

The construction of the systems adds to the diffulties since they are often:

- inaccessible
- poorly installed
- have fans or blowers creating a forced draft

During overhaul all possible channels of fire spread must be checked for hidden fires.

Outside intakes in adjacent buildings may also need to be considered because smoke could be drawn in causing damage or creating a panic situation.

A major problem is the common practice of many ducts terminating in an open attic or partition wall.

This may require the employment of several overhaul techniques such as opening walls, roofs and possibly using ejectors to remove smoke to the outside.

Each duct system will require specific operations depending on its use and construction.

The following general guidelines will bear consideration in buildings equipped with a duct system.

- Determine the portion of the structure which contains ducts and their routing.
- If the system is operating, it should be shut down to alleviate any possible spread of heat, smoke, fire, or fanning of hidden fires.
- All areas involved will need to be ventilated to the outside to allow effective examination of the duct system.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

5-12 Overhaul

5-12.1

Ref: pp. 111-125, #104

OVERHAUL OPERATIONS AROUND DUCT SYSTEMS

- Any false ceilings or framing enclosing the duct system must be checked during overhaul.
- Many duct systems are equipped with openings for cleaning which can be used in checking on fire spread or possibly to extinguish hidden fires.
- Water should not be used carelessly in or around the duct Excessive weight could cause collapse of the duct or concealing members. Only apply water where there is actual fire, not to smoke moving in the duct.
- Duct system outlets must be checked for spread of fire to roofs, other buildings or areas downwind.

4-6 Salvage

4-6.3

Ref: p. 118, #104

Non-salvageable material, such as lath, rags, paper and the like, may be scooped into a carrier, carried out of a building and piled in a conspicuous place for future examination.

Place the material in a safe place in case of rekindle.

After the bulk of all debris has been removed, excess water on flours should be mopped or squeegeed dry.

If the floor is wood, it is a good policy to take up excess moisture by covering the floor with sawdust for a period and then remove the sawdust.

Damp sawdust should not be left on the floor longer than absolutely necessary, for it may damage the floor.

During the removal of debris from buildings, careful observance should be made of any evidence of incendiarism that might be present.

Should such conditions arouse suspicion, the area involved should be left intact until further investigation has been carried out.

4-1 General

4-1.1

Ref: pp. 119-124, #104

See also pp. 25-50 Unit I General/Orientation

DETERMINING CAUSE OF FIRE

During the thorough overhaul of a building, indications of the cause of fire will be found.

Any information that will be of assistance to fire investigators should be noted.

In addition to general facts that may be apparent, the area of the structure where the fire started and the point of origin may be discovered.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-1 General

4-1.1

Ref: pp. 119-124, #104

See also pp. 25-50, Unit I General/Orientation

DETERMINING CAUSE OF FIRE

Any significant conditions which may have encouraged the fire to start or possible ignition sources that are found should be preserved for the investigation team.

Their analysis of the fire can be much easier if they do not have to completely sift through the debris.

The immediate discovery of the cause may lead to the prevention of a similar fire within the community.

RECOGNIZING AND PRESERVING EVIDENCE OF ARSON

An official fire report should be completed for every incident.

The report is usually made out by the officer or person in charge of the firefighting operations.

In making out the report the officer should try to determine the cause of the fire.

If it is felt that arson is involved, an experienced investigator may be called in.

Fires of intentional origin may be caused, responded to and extinguished without being investigated if the fire department personnel do not recognize the evidence that is sometimes quite pronounced during and immediately after fires.

Those firefighters who arrive on the scene and make the initial attack, and those who perform the subsequent overhaul have the responsibility to watch for and recognize unusual or unnatural circumstances which possibly indicate a suspicious fire.

Arson is a peculiar crime in that there are usually no complaining witnesses to the crime.

Arson is often the result of considerable planning and preparation although arson committed on the spur of the moment decision is common.

Since firefighters are not normally enforcement officers, trained investigators usually investigate suspected individuals and conditions.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-1 General

4-1.1

Ref: pp. 119-124, #104

See also pp. 25-50, UNIT I General/Orientation

RECOGNIZING AND PRESERVING EVIDENCE OF ARSON

Recognizing and preserving evidence of arson is the responsibility of firefighters, without which a trained investigator will always be seriously handicapped.

Local firefighters should become proficient in

- observing
- recognizing
- preserving

evidence of arson

and

organizing the evidence or information in a sequence that will benefit the investigator(s) when they arrive.

They must then communicate pertinent information to the investigator.

The purpose here is to outline such activities for this use.

This becomes even more important with recent court decisions requiring search warrants for re-entry into a building.

There should be no discussion of the fire with outsiders if arson is suspected.

The following outline of activities for recognizing evidence of arson and the excerpts on protecting and preserving evidence of arson are abstracts from the National Fire Protection Association's publication, "The Firefighter's Responsibility in Arson Detection".

REMEMBER ONCE DISCOVERED, EVIDENCE MUST BE PROTECTED

PROTECTING AND PRESERVING EVIDENCE OF FIRE CAUSES

Two things should be kept clearly in mind by firefighters regarding the protection and preservation of evidence of fire cause.

- Keeping the evidence where it is found, untouched, and undisturbed, if at all possible.
- Properly identifying, removing and safeguarding such evidence that cannot be left at the scene of the fire as it was discovered.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-1 General

4-1.1

Ref: pp. 119-124 #104

See also pp. 25-50 UNIT I General/Orientation

TEACHING POINTS

PROTECTING AND PRESERVING EVIDENCE OF FIRE CAUSES

No changes of any kind should be permitted in the evidence other than what is absolutely necessary in the extinguishment of the fire.

Photographs are excellent supporting evidence if they are taken immediately.

The photographs should be made before any evidence is washed away.

One precaution that must be excercised by all firefighters during the fighting of a fire is to avoid trampling over possiblearson evidence and obliterating it so much that it becomes useless.

The same precaution applied to the excessive use of water may avoid similar insatisfactory results.

REMEMBER; that overhaul and clean-up of areas which seem remote to the point of fire origin can destroy evidence vital to the investigation of the incident.

PROTECT AND GUARD EVIDENCE

Evidence remaining at the scene of a fire can be protected in various ways, if an when discovered.

Areas containing the evidence:

- can be roped off
- goods and materials of various kinds can be piled around the evidence to keep people away until the arrival of the investigator
- Post guards to prevent tampering or needless handling of evidence
- Prevent any unauthorized entry and even accompany the owner/occupant on any visit until after the property has been released by the fire department.
- Leave plenty of room around the evidence to protect it exactly as it was found.
- Protect several feet of discovered tire tracks and if the car turned around, protect the print of all four wheels where the car turned.

Detection work of this kind by firefighters makes it possible for trained investigators to later take measurements, photographs and make plaster casts.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-1 General

4-1.1

Ref: pp. 119-124 #104

See also pp. 25-50 UNIT I General/Orientation

PROTECT AND GUARD EVIDENCE

The protection of several human footprints permits;

. measurement of the prints

. comparison of the prints

. estimate of length of stride

. position of feet

. peculiarities in the gait (walk or run) of suspect

It may also be possible to secure identifying marks on soles and heels of shoes.

Take similar precautions with animal footprints.

Boxes placed over prints will prevent dust from blowing over an otherwise clear print and keep them in good condition for either photographs or plaster casts.at a later time.

Burned and partially burned papers found in a furnace, stove or fireplace should be protected by closing dampers and other openings immediately upon discovery.

This operation will eliminate or reduce the draft. Wet rags may be used to smother the fire or stuff smokepipes. DO NOT DIRECT STREAMS OF WATER ON SUCH EVIDENCE.

Call to the attention of the investigator any grease or oxidizer that is suspected to have had a part in the fire.

Bottles which have been used to carry flammable liquids can sometimes be used to develop latent finger prints, although this possibility is not general because of the smudging of the prints by the oil.

It is, however, considered of sufficient importance to protect all such bottles from indiscriminate handling, so that if such prints do exist, they can be identified.

Sometimes bottles filled with flammable liquids and tightly sealed are hung over the set fire so that, when they reach a sufficient temperature, the bottle will break and allow the liquid to increase the intensity of the fire.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-1 General

4-1.1

Ref: pp. 119-124. #104

See also pp. 25-50 UNIT I General/Orientation

POINTS ON PROTECTING AND PRESERVING EVIDENCE

- Use care in application of hose streams.
- Perform overhaul and salvage carefully.
- Have a witness to all discoveries.
- Record the time of day, date , location and circumstances under which evidence was discovered.
- Call the proper investigative authority to carry on with the evidence you have detected.
- Do not allow evidence to be walked over and trampled out.
- Install barricades around and properly guard evidence.
- Handle evidence as little as possible.
- Move evidence from the scene of the fire only when absolutely necessary.
- Have phtographs taken at the scene of the fire when evidence must be removed.
- If persons are included in the photographs, be certain they are identified.

OBSERVING GENERAL CONDITIONS AT THE SCENE OF THE FIRE

A. Upon approaching the fire:

1. Observe the elements.
2. Observe persons and automobiles
3. Observe color of smoke and flame
4. Observe size of fire and speed at which it is traveling.

B. Upon arrival at the fire

1. Observe the are of origin
2. Observe the number of separate fires, their intesity and rapidity of spread
3. Observe odors, methods and difficulties encountered in extinguishing the flames
4. Observe the source of ignition and the material ignited

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-1 General

4-1.1

Ref: pp. 119-124 #104
See also pp. 25-50, UNIT I General/Orientation

TEACHING POINTS

OBSERVING CONDITIONS AT THE TIME OF THE FIRE

A. Conditions outside the buildings
B. Condition of the building

1. Observe whether the doors and windows are locked.
2. Observe the condition of door, windows and locks.

C. Condition of owners, occupants, bystanders.

1. Observe the dress and manner of persons at the fire. (pump operators can sometimes scan the crowd or talk to bystanders).
2. Look for familar faces.

D. Condition of contents.

1. Watch for indications of the removal of personal articles.
2. Watch for the indications of the removal of valuable merchandise.

LOCATING EVIDENCE OF FIRE CAUSES

A. Look for indications of arson intent.

1. Multiple fires.
2. Odors
3. Area of most severe burning
4. Fire damage to ceiling and floor areas
5. Undue wood charring
6. Uneven wood burning
7. Holes made in walls and floors before fire
8. Holes burned in floors possibly by accelerants
9. Underside of contents and structural elements
10. Inoperative sprinklers and fire doors
11. Tracks, footprints and fingerprints
12. Condition of heating equipment
13. Containers used for flammable liquids
14. residues of wax or parrifin
15. Debris and salvage should be removed in layers
16. Wtach for the "V" burn pattern

B. Look for arson materials and arson equipment

1. Trailers between fires
2. Candles
3. Matches
4. Chemicals
5. Flammable liquids
6. Rags, waste and paper
7. Gas stoves
8. Glass (especially magnifying glass)
9. Bottles
10. Unusual gadgets and timing devices
11. Electrical equipment

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-1 General

4-1.1

Ref: pp. 119-124 #104
See also pp. 25-50 UNIT I General/Orientation

POSSIBLE INDICATIONS OF ARSON

- Look for the unusual and unnatural.
- The presence of incendiary plants or materials.
- Multiple origins or uncommunicated fires.
- Fire proceeded by apparent preparation, such as removal of contents or absence of contents that are usual to a place of business or a dwelling. Removal of personal items.
- Fires destroying obsolete, unsaleable or unuseable contents.
- Peculiar conditions and locations of burning, such as in the center of the building, or unnatural fire spread.
- Rearrangement of furniture or furniture used to block means of entry.
- Closet fires.
- Water heater fires
- The presence of a suspicious location of electrical appliances
- Fires which give evidence of damaged fuel lines or electric wiring prior to fire
- Open gas jets
- Paper or newspapers spread around
- Fires where damaged or pre-burned contents are found
- Fires on property listed for sale or during renovations
- Fires to cover up other crimes such as murder, theft or burglary.

4-17 Overhaul

4-17.1

PREVENTING UNNECESSARY DAMAGE

Damage which would be sustained by a building after the fire can be curtailed by overhaul.

- Smouldering fires can be doused limiting further smoke damage.
- Hidden fires are extinguished, removing the chance of rekindle.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-17 Overhaul

4-17.1

Ref: pp. 119-124 #104

PREVENTING UNNECESSARY DAMAGE

- water and debris are removed limiting the absorbtion of water and dirt
- safety hazards that could cause accidents are removed
- Closing of water valves and the draining of steam pipes, liquid tanks, sprinkler systems, product lines, toilets and elbows in drains to prevent further water damage in unheated buildings.
- Before using a bathtub for final extinguishment of pillows, beddings and stuffed pillows guard or plug the drain to avoid plumbing damage.
- When opening a wall;
  1. First place a salvage cover on the floor to catch the debris.
  2. Remove the baseboard, and place an investigation hole behind the baseboard where it can easily be covered or repaired if no fire is evident.
  3. When fire is evident, remove the wall covering as far up as necessary.
  4. Care should be taken to remove only as much wallboard, lath and plaster or metal ceiling as necessary.
- If heavy materials are on upper floors and can be moved, they should be placed near the outside wall or over supporting columns or bearing walls to alleviate the possibility of floor collapse.
- An important item to preserve to assist in the determination of the loss is any water soaked or partially burned records or inventory documentation.
- When overhauling, packages or cartons should not be opened unless they have been in actual contact with the fire.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-17 Overhaul

4-17.1

Ref: pp. 119-124 #104

TEACHING POINTS

PREVENTING UNNECESSARY DAMAGE

- Only destroyed items of no value should be placed outside or in the street.
- A great deal of care should be taken not to spill bottles, cans, pails or drums of materials. (Additional damage can be caused by these goods mixing or reacting).
- A simple way to limit damage in dwelling fires is to limit the number of personnel inside on minor fires. (This will keep dirt and material from being tracked around).

REMOVING ORIGINAL FIRE CAUSE

In many fire situations after the overhaul operation has led to the determination of the cause, it is evident that the cause can be removed.

The heat source or the fuel source may be removed in order to prevent reoccurrence of the fire.

The safety of those performing overhaul may be enhanced by the removal of the fire cause.

Often the occupants must be educated about the fire cause or they will commit the same mistakes again possibly endangering their lives and the lives of others.

RESTORING THE PREMISES

MAKING THE BUILDING SAFE

Probably the first objective in restoring the premises is making a building safe.

- Hazardous manufacturing processes should be thoroughly checked by a competent technician to prevent additional damage by fire or explosion and to safeguard against the dangers of chemicals or gases.
- Utilities, gas, electric should be shut off or disconnected as soon as possible. These lines and supply lines should be checked carefully before the services are restored.
- Check the structural condition of the building;

  a. loose cornices
  b. bulging or cracked walls
  c. sagging floors
  d. weakened roofs

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-17 Overhaul

4-17.1

Ref: pp. 127-138 #104

4-6 Salvage

4-6.4

Ref: pp. 128-131 #104

TEACHING POINTS

MAKING THE BUILDING SAFE

Guard and barricade the premises to prevent needless injuries,

Insure that the premises are restored to the best possible condition before returning to control of owner/occupant.

COVERING ROOFS, WINDOWS AND DOORS

Covering holes in roof after fires is a very important operation for it is essentially a poor practice to salvage a stock of merchandise or household furnishings and later have them damaged by the elements.

The type of roof and size of opening determine the method of covering.

To cover a small hole on a pitched roof;

1. Raise the roofing materials around the top of the hole with a claw, kelly or similar tool.
2. Place the material used to cover the hole under the uplifted roofing to prevent water running underneath.
3. Secure the sides and bottom of the cover with roofing nails.

   (If salvage covers are used, lath or boards should be use to hold down the edges as nails should only be driven in grommet holes).

To cover a hole at or near the peak of the roof;

1. place cover over hole and both sides of the ridge.
2. Properly secure on all four sides.
3. If two covers are required, place the covers from the pe down lapping the top cover at least six inches over those placed below on the roof and secure the edges.

When covering holes in a flat roof the edges around the hole are raised about six inches and blocked with available materials.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed.

4-6 Salvage

4-6.4

Ref: pp. 128-131 #104

COVERING ROOFS, WINDOWS AND DOORS

For small holes a frame may be made from the roof boards and secured around the hole.

The frame raises the cover above the roof and provides for drainage.

When covering a larger hole on a flat roof, the roofing nap paper or tin must also be raised and blocked with bricks or blocks of wood.

A framework may be necessary to support the covering materials on a larger hole.

This can be constructed by securing short wooden uprights at the edges of the hole and putting a support across the top.

The cover is placed over this and secured around the edges by weighting or nailing.

In some instances it will be impossible to cover roof openings.

When this condition exists the area below the roof is protected by "bagging".

The ceiling joists or flor below the roof is covered forming bags or troughs between the structural members to hold any water.

Skylights, roof hatches and air shafts are probably the easiest of all roof openings to cover and make water tight because of the elevated framework.

. Roof openings should be covered with:

1. roof covers
2. salvage covers
3. tar paper
4. plastic sheets

The edges must be

a. tied
b. weighted
c. nailed down

for security from the wind.

INSTRUCTORS NOTES

TEACHING POINTS

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

4-6 Salvage

4-6.4

Ref: pp. 128-131

COVERING ROOFS WINDOWS AND DOORS

Outside openings, damaged or removed windows and doors, must be covered during overhaul.

A good grade of roofing paper makes a satisfactory cover for open doorways and windows.

Roofing paper can also be held in place with strips of wood and nails.

If the opening is in a masonry wall, masonry nails can be used to good advantage.

Since plate glass windows are larger, they will require a salvage cover to close.

In order to keep the wind from blowing the cover and the normal building breathing action from stressing the cover, a brace will be needed behind the cover built from materials available at the site.

Also secure the cover from the outside with a nailed board.

RELEASING THE PREMISES

After overhaul activities are completed, releasing the premises back to the property owner is usually in order.

This is a simple yet formal procedure and should be done in the presence of a witness.

This release may only involve the property owner, but in some instances, other persons are involved.

For this reason public relations, play an important part in making the proper release.

Tactful, but firm recommendations should be made to the correct persons, and the utmost cooperation should be practiced.

The following is a list of persons who may be involved and the fire department's responsibilities to them.

. The owner and occupants

  Advise about conditions, especially any remaining unsafe conditions.

  Recommend necessary precautions.

INSTRUCTORS NOTES

Ref: Salvage and Overhaul #104, IFSTA, 6th ed. pp. 1-138

TEACHING POINTS

RELEASING THE PREMISES

. Utilities

Give full cooperation

Recommend necessary precautions

. Other Authorities

Cooperate with law enforcement representatives

Cooperate with city officials

Notify proper authorities of suspicious fires

UNIT QUIZ

Fill in the blank with the most appropriate answer.

1. The damage caused by smoke and water can frequently exceed the direct loss by fire, but these losses can be materially reduced through planned and well executed

   _____ and _____ Practices.

2. Salvage work in the fire service consists of those methods and operating procedures allied to fire fighting that aid in reducing _____, _____, and _____ damage during and after fires.

Circle the letter at the correct answer

3. One of the most practical means of removing water that comes through the ceiling from upper floors is by chutes. Effective water chutes can be made with two _____ _____ and a salvage cover.

   a. firefighters
   b. pike poles
   c. chairs

4. Water chutes may also be used on ladders or _____.

   a. stairways
   b. floors
   c. tables

5. When a tarp is used, nails should be driven only through the grommet _____ for support of the tarp.

   a. material
   b. hem
   c. holes

6. For a small opening in a pitched roof, plastic sheeting or tar paper can be nailed or stapled to _____.

   a. a simple framework of boards
   b. any secure support
   c. the roof along side the hole

7. Above the opening, the cover is placed _____ the roofing material and nailed with large headed nails.

   a. above
   b. underneath
   c. to adjoin with

Circle the letter at the correct answer

8. A _____ nailed around the edges helps prevent tearing of the cover if windy weather is probable.

   a. plastic sheet
   b. tar paper support
   c. wood lath

9. It is considered poor public relations to dump debris _____

   a. onto the streets and sidewalks
   b. into trash bins
   c. anywhere

10. It is usually considered to be a mark of _____ if required to return to the scene of a fire to cope with a rekindle.

    a. inefficiency
    b. courtesy
    c. experience

11. An important objective in searching for hidden fires should be to make a systematic and careful check to determine whether the fire _____ .

    a. is out in the area
    b. extended to other areas of the building
    c. has caused extensive damage

12. Hidden fires in concealed spaces can often be detected by feeling with the hands, by _____, by _____ or by _____ .

    a. smelling, discoloration, smoke
    b. hot walls, hanging wallpaper, water spots
    c. looking for evidence of arson, smoke, locked doors

13. A large catchall can be made with salvage covers thrown over four _____.

    a. firefighters
    b. chairs
    c. blankets

14. _____ lines should always be available during the extinguishment of hidden fires.

    a. charged hose
    b. telephone
    c. electrical

15. Shoveled debris collected in large containers such as _____ can reduce the number of trips back and forth to the fire area.

    a. pails
    b. trash bins
    c. garbage cans

16. Larger furnishings such as mattresses and overstuffed furniture should be _____ where they can be more easily and throughly extinguished.

    a. removed to the outside
    b. put into a bathtub
    c. moved to a hallway

Fill in the blank with the most appropriate answer

17. Ordinarily, the only cleaning that is required for salvage covers is _____ _____.

18. Permitting salvage covers to dry while in a dirty condition is not a good practice because after carbon and ash stains have dried, a _____ action takes place that _____ covers.

19. Canvas salvage covers should be perfectly _____ before they are folded.

20. After salvage covers are dried, they should be examined for _____ and repaired.

ANSWER KEY

1. salvage, overhaul
2. fire, smoke, water
3. b.
4. a.
5. c
6. a
7. b
8. c
9. a
10. a
11. b
12. a
13. b
14. a
15. c
16. a
17. Showering with hose stream/scrub with broom
18. Chemical/rots
19. dry
20. damage

A - GROUPED FURNISHINGS

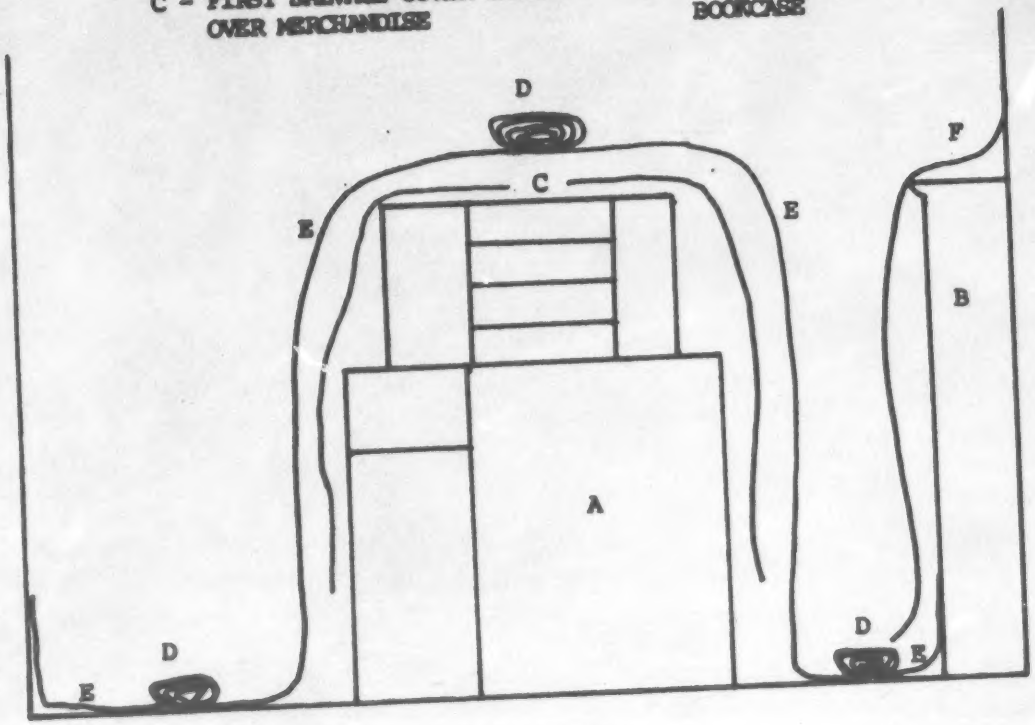
B - BOOKCASES

C - FIRST SALVAGE COVER THROWN OVER MERCHANDISE

D - SALVAGE COVER SPLICES

E - SALVAGE COVERS USED TO BAG FLOOR

F - LAST SALVAGE COVER THROWN OVER BOOKCASE



SIDE VIEW

In occupancies with wall-to-wall carpeting it will be necessary to place the covers as illustrated to provide complete floor coverage and minimum water damage.